

**GENERAL DESIGN MEMORANDUM
FOR
MODIFICATION OF
KAWAIHAE HARBOR**

HAWAII, HAWAII



**U. S. ARMY ENGINEER DISTRICT
HONOLULU, HAWAII**

MARCH 1968

GENERAL DESIGN MEMORANDUM
FOR MODIFICATION OF
KAWAIHAE HARBOR, HAWAII

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
	PERTINENT DATA	
1	AUTHORITY	1
2	AUTHORIZED PLAN OF IMPROVEMENT	1
3	LOCAL COOPERATION REQUIREMENTS	1
4	PREVIOUS STUDIES	2
5	DESIGN MEMORANDUM STUDIES	3
6	COMPLIANCE WITH LOCAL COOPERATION REQUIREMENTS	3
7	ESTIMATED COSTS OF REQUIRED LOCAL COOPERATION	3
8	PROSPECTS FOR FULFILLMENT OF REQUIRED LOCAL COOPERATION	4
9	PROJECT LOCATION	4
10	TRIBUTARY AREA	4
11	EXISTING FEDERAL PROJECT	4
12	PLAN OF IMPROVEMENT	5
13	DEPARTURES FROM PROJECT DOCUMENT	6
14	MODEL STUDIES	6
15	DREDGING PLAN	8
16	DESIGN OF PROTECTIVE STRUCTURES	8
17	GEOLOGY	9
18	DREDGEABILITY OF MATERIAL	9
19	SOURCES OF CONSTRUCTION MATERIALS	9
20	REAL, ESTATE REQUIREMENTS	10
21	COORDINATION WITH OTHER AGENCIES	10
22	ESTIMATE OF PROJECT FIRST COSTS	11
23	COMPARISON OF COST ESTIMATES	14
24	APPORTIONMENT OF PROJECT FIRST COSTS	15
25	OPERATION AND MAINTENANCE	17
26	ESTIMATE OF AVERAGE ANNUAL CHARGES	17
27	ESTIMATE OF ANNUAL BENEFITS	18
28	COMPARISON OF BENEFITS	19
29	BENEFIT-COST RATIOS	20
30	WORK SCHEDULE	20
31	RECOMMENDATION	21

LIST OF TABLES

<u>Table</u>	<u>Subject</u>	<u>Page</u>
1	Kawaihae Deep-Draft Harbor Estimate of Project First Costs (Before Apportionment)	12
2	Kawaihae Light-Draft Harbor Estimate of Project First Costs (Before Apportionment)	13
3	Comparison of Federal Project First Costs Before Apportionment	15
4	Apportionment of Costs between Interests	16
5	Estimate of Average Annual Charges	18
6	Summary and Allocation of Benefits	19
7	Comparison of Estimated Annual Benefits	20
8	Benefit-Cost Ratios	20

LIST OF PLATES

<u>Number</u>	<u>Subject</u>
1	GENERAL PLAN
2	DETAILED PLAN OF IMPROVEMENT
3	BORING LOGS
4	QUARRY SITE AND LOGS OF CORE BORINGS

LIST OF FIGURES

<u>Number</u>	<u>Subject</u>
1	Tributary Area of Kawaihae Harbor - Island of Hawaii
2	Work Schedule